

REMARKS

I. Introduction

Applicants and Applicants' representative would like to thank Examiner Budd for the indication of allowable subject matter recited by claims 11 and 13. In response to the Office Action dated March 31, 2005, Applicants have amended claims 10 and 12 so as to incorporate the allowable subject matter recited by claims 11 and 13, respectively. Claims 11 and 13 are canceled, without prejudice or disclaimer. The dependency of claims 14 and 15 has also been amended to depend on amended claim 10. Also, Applicants have amended claims 1-4 and 10 so as to further clarify the claimed subject matter and to address the pending rejection under 35 U.S.C. §112. Support for these amendments can be found, for example, in Figs. 7-10 and their corresponding sections of the specification. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. Telephonic Interview

Upon receiving the pending Office Action, Applicants note that an error has been made with respect to the allowable claims. Specifically, the pending Office Action indicates that claims "1, 4, 4" and their dependent claims are allowable if rewritten to overcome the pending rejections under 35 U.S.C. §112. As it is unclear to which claims have been indicated to contain allowable subject matter, Applicants initiated a telephonic interview with Examiner Budd. Applicants' and Applicants' representative would like to thank Examiner Budd for his courtesy and professionalism in conducting a telephonic interview, and for his assistance in resolving these issues. In response, Examiner Budd has indicated that, in addition to claims 11 and 13,

claims 1, 4 and 5/4, 6/4, 7/4, 8/4 and 9/4 are allowable if amended to overcome the pending rejections under 35 U.S.C. §112. In this regard, Applicants and Applicants' representative would like to thank Examiner Budd again for the indication of allowable subject matter recited by claims 1, 4, 5/4, 6/4, 7/4, 8/4 and 9/4.

III. The Rejection Of Claims 5 and 8 Under 35 U.S.C. § 112, Second Paragraph

Claims 1-9 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite, because the Examiner asserts that "one cannot discern whether a method or an apparatus" is being claimed, as no step is defined or recited therein. In response, Applicants have amended claims 1, 2 and 3 to include the phrase "the method comprising the steps of" so as to properly recite the steps disclosed therein. Accordingly, it is respectfully submitted that the pending rejection under 35 U.S.C. § 112, first paragraph has been overcome in view of the foregoing amendment.

Furthermore, the Examiner asserts that claim 2 is confusing because it is unclear what the "width center values" and "electric field zero point" refer to. As the foregoing claim features have been deleted from claim 2, it is respectfully requested that the pending rejection under 35 U.S.C. § 112, second paragraph, to claim 2 be withdrawn.

IV. The Rejection Of Claims 3, 6-9, 12, 15 and 17-20 Under 35 U.S.C. § 102

Claims 3, 6-9, 12, 15 and 17-20 are rejected under 35 U.S.C. §102(b) as being anticipated by USP No. 4,093,885 to Brown. Applicants respectfully traverse this rejection for at least the following reasons.

Claim 3 recites in-part that during the step of positioning the piezoelectric element, wherein during said positioning, 1) a polarization recovery voltage for recovering from deterioration of polarization is superposed and applied on the position control voltage, 2) the polarization recovery voltage for recovering from deterioration of polarization is applied by changing over with the position control voltage in a film thickness direction of the piezoelectric element *or* 3) the polarization recovery voltage for recovering from deterioration of polarization is applied in a film thickness direction of the piezoelectric element when the position control voltage is not applied.

Specifically, it is alleged that Brown discloses a piezoelectric actuator using thickness-polarized piezoelectric elements driven by both a position control circuit and a bias circuit for polarization recovery or depolarization prevention.

However, Applicants respectfully disagree with this conclusion, because the feedback control system of Brown is structured so that the signal output from the read transducer 34 is transmitted to the transducer position control circuit 86 while feeding back the signal output from the drive amplifier 100 to the read transducer 34. Accordingly, it is not possible to supply a voltage (let alone a polarization recovery voltage) to the transducer for polarization recovery.

Furthermore, as expressly disclosed at col. 13, lines 55-65 and Fig. 6 (Prior Art) of Brown, applying a large voltage in a direction opposite to the poling direction of the piezo-ceramic element depolarizes the element and reduces its ability to bend or deflect. In order to drive a bimorph with a large amplitude deflection voltage without depolarizing the piezo-ceramic element, deflection voltages are applied to the piezo-ceramic elements such that the polarity of the applied voltage is always in the poling direction of the element to which it is applied so that a large degree of deflection of the bimorph can be effected without depolarizing the piezo-ceramic

elements (i.e., 160/162 of Fig. 8a) (see, col. 14, lines 6-12). For instance, by supplying a DC voltage having a magnitude equal to $\frac{1}{2} V_{\max}$ (i.e., $\frac{1}{2}$ of the peak to peak amplitude of the largest deflection signal) from the source 174 to the piezo-ceramic element 160 in its poling direction and from the source 176 to the piezo-ceramic element 162 in its poling direction, the piezo-ceramic elements 160/162 are oppositely biased to $\frac{1}{2} V_{\max}$ so as to prevent the deflection of the bimorph 158. Thus, as is apparent, the problem related to depolarization does not arise in the method of Brown, as the method is intended to prevent depolarization. Accordingly, as depolarization does not take place in the method of Brown, it is respectfully submitted that Brown is completely silent with regard to *recovering from* deterioration of polarization, let alone disclose applying a polarization recovery voltage to the piezo-ceramic element.

In contrast, in accordance with one exemplary embodiment of the present invention, position control is conducted by supplying a voltage to the reverse direction with respect to the poling direction of the piezoelectric element. Once the deterioration of polarization has taken place, a polarization recovery voltage is superposed and applied on the position control voltage, applied by changing over with the position control voltage in a film thickness direction of the piezoelectric element or applied in a film thickness direction of the piezoelectric element. As a result, the piezoelectric element is recovered from the deterioration of polarization while the piezoelectric actuator is being assembled in the disk apparatus.

As anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and at a minimum, Brown fails to disclose or suggest the foregoing claim elements, it is clear that Brown does not anticipate claim 3 or any of the claims dependent thereon.

V. The Rejection Of Claim 10 Under 35 U.S.C. § 102

Claim 10 is rejected under 35 U.S.C. §102(a) as being anticipated by “Piezoelectric properties of c-axis oriented Pb(Zr, Ti) O₃ thin films” to Kanno. As claim 10 has been amended to incorporate the allowable subject matter recited by claim 11, the rejection thereof is moot.

VI. The Rejection Of Claims 5-16 and 21-25 Under 35 U.S.C. § 103

Claims 5-16 and 21-25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Brown. As claims 10 and 12 have been amended to incorporate the allowable subject matter recited by claims 11 and 13, respectively, the rejections to claims 10, 12 and the dependent claims thereof are moot.

VII. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claims 1-3 and 10-12 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

VIII. Conclusion

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP

Michael E. Fogarty
Registration No. 36,139

**Please recognize our Customer No. 20277
as our correspondence address.**

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 MEF/AHC/dlb
Facsimile: 202.756.8087
Date: June 30, 2005